May 27, 1924. 1,495,374

W. S. WITTEN

LOCKING DEVICE FOR CAR DOORS

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Fig. 1.

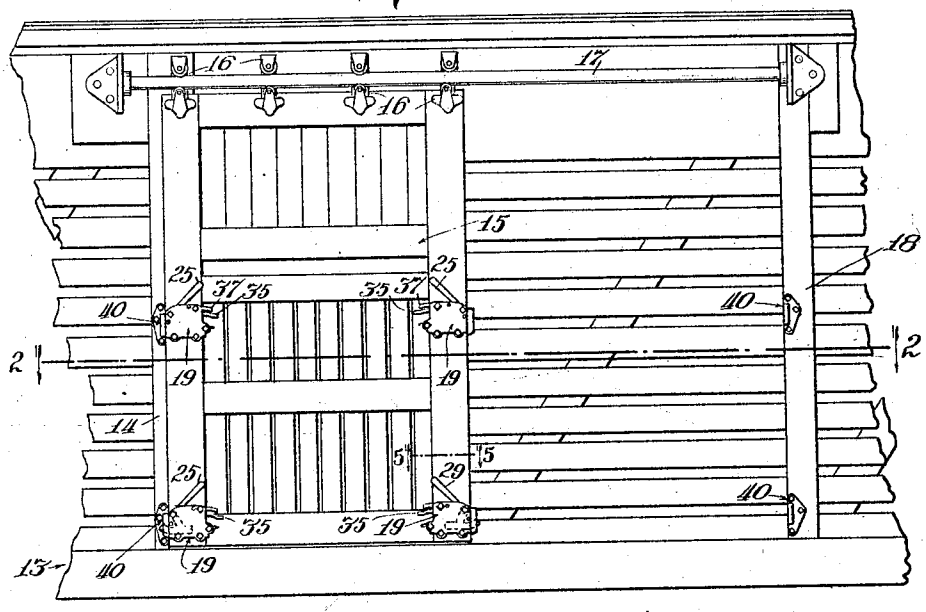


Fig. 2.

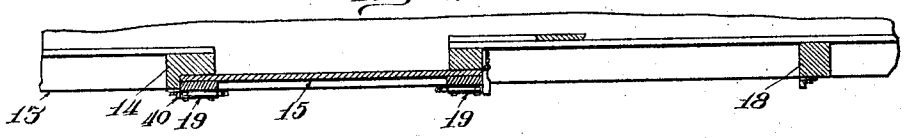


Fig. 3.

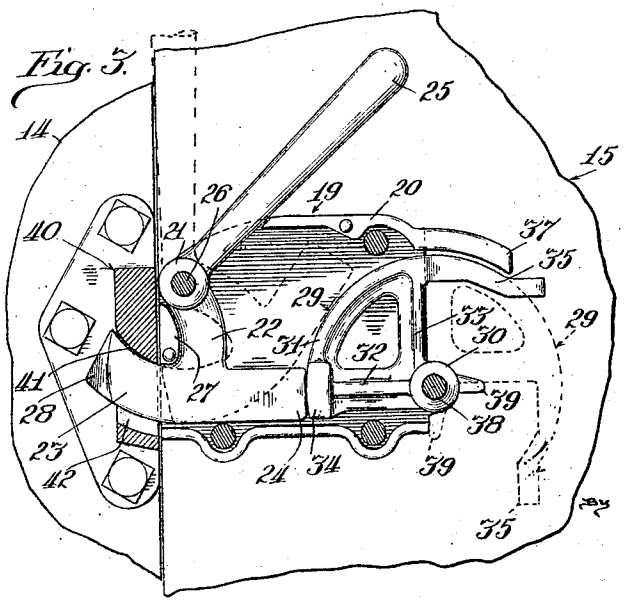
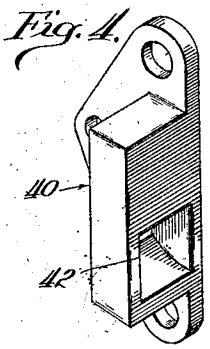


Fig. 4.



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Fig. 5.

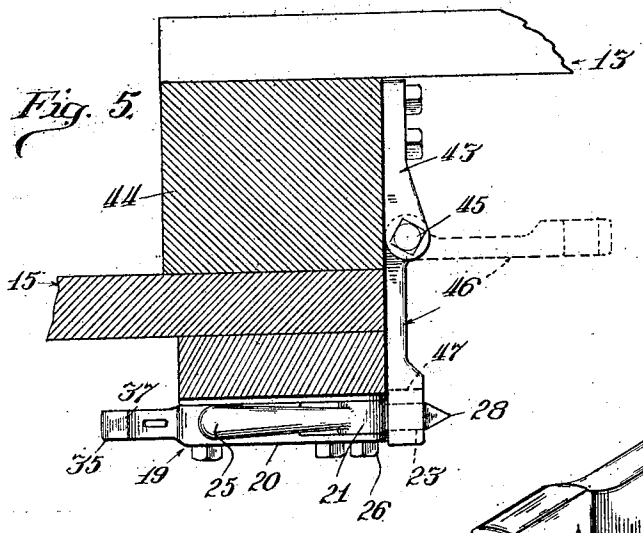


Fig. 8.

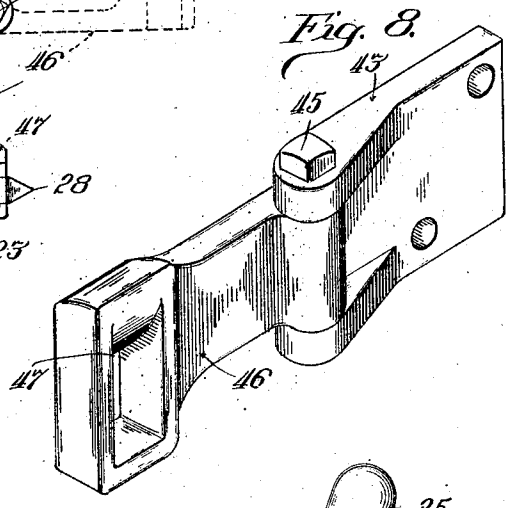
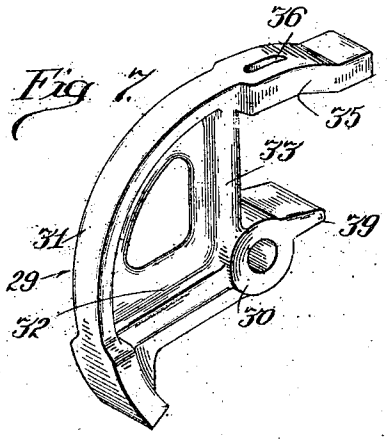


Fig. 7.



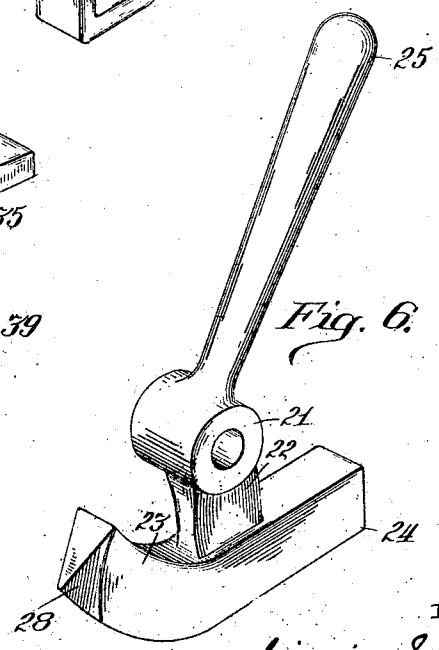


Fig. 6.

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Fig. 9.

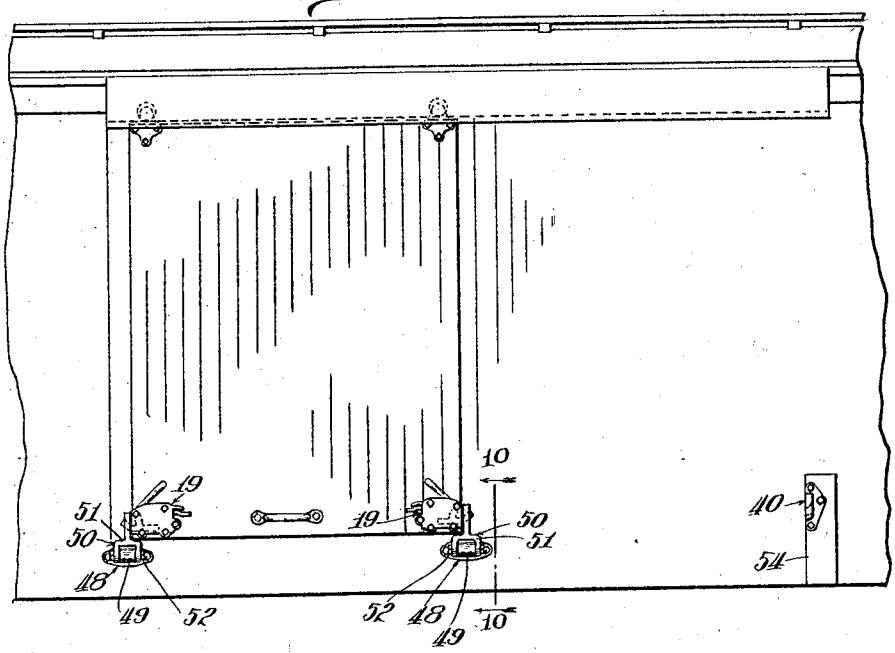


Fig. 10.

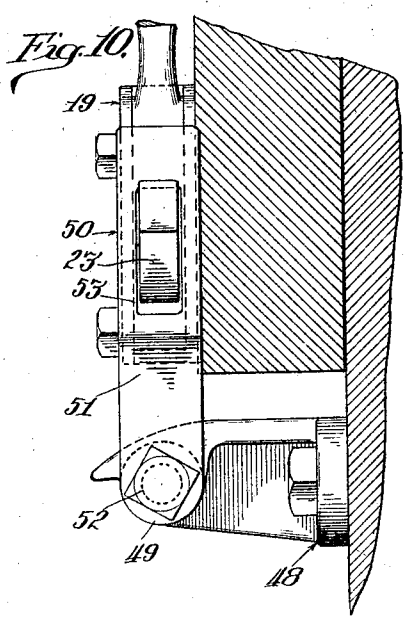


Fig. 12.

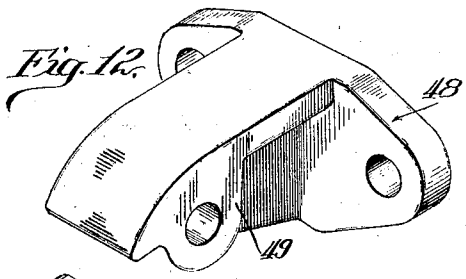
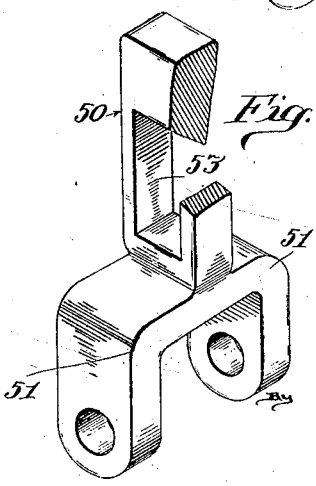


Fig. 11.



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Patented May 27, 1924. 1,495,374

UNITED STATES PATENT OFFICE.

WILLIAM S. WITTEN, OF CHICAGO, ILLINOIS.

LOCKING DEVICE FOR CAR DOORS.

Application filed May 25, 1922. Serial No. 563,588.

To all whom it may concern:

Be it known that I, WILLIAM S. WITTEN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locking Devices for Car Doors, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to locking or latching devices for car doors or other analogous uses, and has for its object to provide an improved latch which will automatically assume its operative position under the action of gravity, and may be applied in right or left position to a car door, to a gate, or to barn or other doors in connection with which such latches may be appropriately employed; also, with special reference to car doors, to provide improved means for locking the latch in operative position and for sealing it so that it cannot be unlocked without breaking the seal. A further object is to provide an improved keeper, particularly suitable for use on car or other sliding doors, in connection with my improved latch. I accomplish these objects as illustrated in the drawings and as hereinafter described. What I regard as new is set forth in the claims.

In the accompanying drawings,—

Fig. 1 is a partial side elevation of the body of a stock car, showing my improved locking devices applied thereto;

Fig. 2 is a partial horizontal section on line 2—2 of Fig. 1;

Fig. 3 is a side view of my improved lock with the cover plate removed, certain parts being in section;

Fig. 4 is a perspective view of the keeper shown in Fig. 3;

Fig. 5 is a partial horizontal section on line 5—5 of Fig. 1, showing my improved lock and one form of my improved keeper arranged in operative position;

Fig. 6 is a perspective view of the latch portion of my improved lock;

Fig. 7 is a perspective view of a locking and sealing device which forms a part of my improved lock;

Fig. 8 is a perspective view of the keeper shown in Fig. 5;

Fig. 9 is a partial side elevation of a box car having my improved locks applied thereto in connection with a modified form of keeper;

Fig. 10 is an enlarged sectional view on line 10—10 of Fig. 9, showing the lock and keeper in end elevation;

Fig. 11 is a perspective view, partly broken away, of the form of keeper shown in Figs. 9 and 10; and

Fig. 12 is a perspective view of the bracket upon which the keeper shown in Fig. 11 is pivoted.

Referring to the drawings,—13 indicates a box car and 14 one of the side frames of the door opening. 15 indicates the door, which is of the usual sliding type, suspended by hangers 16 from a rod 17 which extends over the door opening and sufficiently far to one side thereof to permit the door to be moved completely away from the door opening. As the rod 17 is circular in cross-section, the door may also be swung out at the bottom to loosen it and to permit it to slide more freely into and out of operative position. 18 indicates a bar secured in a vertical position to the side of the car at a suitable point to form a stop for the door when it is completely opened as shown in Fig. 1. In Fig. 1 the door is shown as equipped with four locks or latches 19, two of which are secured to the opposite lower corners of the door so that they face in opposite directions, the other two being in like manner secured to the stiles of the door, preferably slightly below the vertical center thereof. Each of these locks, as best shown in Fig. 3, comprises a case 20, in which is mounted a swinging latch comprising a hub portion 21 and a shank or stem 22 depending from the hub portion 21, a bolt 23 projecting laterally from the lower end of the shank 22, a weighted head 24 which projects in the opposite direction from the lower end of the shank 22, and a handle or operating lever 25 which is connected with the hub portion 21 and extends diagonally upward therefrom over the head 24. The hub 21 is mounted upon a pivot 26, and, consequently, the weight of the handle 25 and head 24 counterbalances the weight of the bolt 23 and causes it to be projected by gravity as far as is permitted by a stop member 27 which forms a part of the case. As best shown in Fig. 3, the bolt 23 is curved upwardly toward its outer end, and its outer end is beveled at the sides, as shown at 28 in Figs. 3 and 6, so that it may be more readily guided into the keeper hereinafter described. When the latch is in

its normal position shown in Fig. 3, the head 24 extends substantially horizontally from the shank 22, but when the handle 25 is swung to the left, as viewed in said figure, the parts ultimately assume the positions shown in dotted lines therein, the bolt 23 being then withdrawn into the case 20.

For holding the bolt projected, thereby making the latch serve as a lock, I provide a segmental locking member in the form of a sector 29, comprising a hub portion 30, a peripheral portion 31 and radial or spoke members 32, 33 connecting the peripheral portion 31 to the hub. At one end the peripheral portion 31 is provided with a head 34, and at the other end it is provided with a plate 35 having a slot 36 which, when the segmental locking member is in its operative position, is adapted to register with a corresponding slot in an arm 37 extending from the case 20, as shown in Fig. 3. The locking member 29 is mounted upon a pivot 38, supported by the case in substantial alinement with the head 24, the arrangement being such that the locking member 29 is adapted to be swung so that its head 34 lies between the head 24 and the pivot 38, at which time the slot 36 registers with the corresponding slot in the arm 37, and they may be secured together by a seal in the usual way. When the head 34 is in this position it, of course, prevents swinging of the latch and holds the bolt 23 in its extended or operative position. The locking member 29 may, however, be swung to the position shown in dotted lines in Fig. 3, thereby releasing the latch so that it may be swung freely on its pivot 26. For limiting the extent of movement of the locking member 29 in a clock-wise direction as viewed in Fig. 3, the hub 30 is provided with a lug 39 which is adapted to abut against a portion of the case, as indicated by dotted lines in Fig. 3. As shown also in Fig. 3, the plate 35 is arranged to extend out somewhat beyond the outer end of the arm 37, so that it may easily be grasped for operating it. By making the locking member 29 of the shape shown and described, it operates smoothly and is very substantial in construction so that it cannot easily be broken or get out of repair. It also serves as a means of locking the bolt in its inoperative position, since when the bolt is in its inoperative position, shown in dotted lines in Fig. 3, by turning the locking member to its operative position, shown in full lines in said figure, the bolt is prevented from returning to its operative position. It may, however, be released by simply swinging the locking member on its pivot far enough to permit the head 24 to pass it.

In the arrangement shown in Figs. 1, 2 and 3 the bolt 23 engages a keeper 40, which is fixedly secured in position on the side frame 14 of the door opening and is provided with a convex surface 41 at the upper side of the usual opening 42 which receives the bolt. This convex surface conforms to the curvature of the upper margin of the bolt so that the keeper cooperates with the bolt in the manner described in my pending application, Serial No. 540,688, filed March 3, 1922. Keepers are provided for each of the locks 19 so that the door may be securely locked at both vertical margins, and, also, keepers are provided on the bar 18 so that the door may be latched or locked in its open position. This is desirable because by holding the door stationary it is less apt to be damaged in switching the car, and by locking it in its open position persons are not apt to fool with it when the car is not in use. By providing the intermediate latches the door is supported firmly against pressure applied midway of the height of the car, as in the case of double-deck stock cars, or even in ordinary stock cars, where cattle are apt to press against the door at some distance from the floor. The object of beveling the outer end portion of the bolt as described is to permit it to be forced back out of operative position by engagement with the keeper when the lower margin of the door is swung toward the car, as is frequently the case when the door is being closed.

Instead of using integral rigid keepers adjacent to the doorway, as shown in Fig. 3, I prefer to use keepers of an improved type, one form of which is shown in Figs. 5 and 8 and another form of which is shown in Figs. 9 to 11, such keepers comprising a hinged or pivoted member arranged to be swung into or out of position to cooperate with the bolt. In the construction shown in Fig. 5 the keeper comprises a base plate 43, adapted to be secured to a suitable support, such as a doorpost 44, so that it does not project beyond the facing strips of the doorway. Pivotally secured to this base plate by a pintle 45 is a keeper 46 which swings in a horizontal plane into or out of its operative position, as indicated in said figure. When the keeper 46 is in alinement with the base plate 43, it projects far enough beyond the side of the car so that it is adapted to engage the locking bolt which then engages the keeper in the same manner as is shown in Fig. 3. Preferably the keeper 46 is provided at its outer end with a hole 47 of the same character as that shown in the latter figure. By this construction the two keepers at the opposite side margins of the door operate to hold it against edgewise movement in either direction, and the keeper may be swung back out of the way to permit the door to pass it when it is being opened. A keeper similar to that shown in Fig. 5 may be used at both side edges of the door, or, if

desired said keeper may be used at one side edge and the keeper shown in Fig. 4 at the other, in which case the latter keeper would be placed at the left hand edge of the door shown in Fig. 1 and the hinged keeper at the right hand edge, as the door moves to the right when it is being opened.

In Figs. 9, 10 and 11 I have shown a keeper similar to that shown in Figs. 5 and 8, except that it is arranged to swing in a vertical plane instead of horizontally. The keeper shown in the latter figures comprises a bracket 48 adapted to be secured to the side of the car below and adjacent to the side margin of the door opening and provided with an outwardly projecting lug 49, the upper surface of which is beveled at its outer end as shown in Figs. 10 and 12. To this lug is hinged a keeper 50 having a yoke 51 at its lower end adapted to embrace the outer end portion of the lug 49 to which it is connected by a pintle 52 as shown in Fig. 10. The pintle 52 lies in the vertical plane of the locking bolt so that when the keeper is swung to its upright position it will be adapted to be engaged by the locking bolt, for which purpose it is provided with an opening 53 corresponding with the openings 42 and 47. This type of keeper may be used in the same way as that shown in Figs. 5 and 8, but it has the advantage that it swings down out of operative position by gravity and, therefore, it cannot accidentally swing into position to intercept the door, as might be the case with the arrangement shown in Figs. 5 and 8. It also serves more positively as a stop to prevent edgewise movement of the door when it is in its operative position. The hinged keeper construction is particularly suitable for use where the door is not capable of swinging outward to any considerable extent, whereas with the construction shown in Figs. 3 and 4 it is necessary to swing the door out far enough to clear the keeper before it can be moved edgewise.

In Fig. 9, instead of using the bar 18 shown in Fig. 1, I have illustrated a short bar 54 for supporting the rigid keeper 40 by which the door is held in its open position.

What I claim as my invention and desire to secure by Letters Patent, is—

1. A lock comprising in combination a pivoted shank, a bolt projecting at one side thereof, a head at the other side of said shank, and a locking member mounted on a pivot that is in substantial alinement with said head when the bolt is in its operative position and adapted when the bolt is in that position to lie opposite the end of said head to lock the latch against movement.

2. A lock comprising in combination a pivoted shank, a bolt projecting at one side thereof, a head at the other side of said shank, and a sector mounted on a pivot that is in substantial alinement with said head when the bolt is in its operative position and adapted when the bolt is in that position to lie opposite and engage the end of said head to lock the latch against movement.

3. A car door lock comprising a case, a bolt pivotally mounted in said case and normally projected by gravity, and a locking member comprising a pivoted sector adapted to engage said bolt and hold it in operative position, said sector having a plate adapted to cooperate with a portion of the case when said locking member is in operative position to receive a car seal.

4. A car door lock comprising in combination a case, a pendulous shank pivotally supported therein, a bolt extending laterally from the lower part of said shank and normally projected into operative position by gravity, a head extending laterally from the lower part of said shank and in the opposite direction from said bolt, and a locking member comprising a pivoted sector mounted on a pivot that is in substantial alinement with said head when the bolt is in its operative position and adapted when the bolt is in that position to lie opposite the end of said head to lock the latch against movement, said sector having means adapted to cooperate with a portion of the case to receive a car seal.

5. The combination with a car and a sliding door therefor, of a pendulous latch carried by the door and comprising a shank member pivotally secured near its upper end and a bolt member extending from the lower part of said latch member, said bolt member lying parallel with the door and adapted when in its operative position to project beyond a margin of the door, and a hinged keeper secured to the door and adapted to cooperate with said bolt member.

6. The combination with a car and a sliding door therefor, of a pendulous latch carried by the door and comprising a shank member pivotally secured near its upper end and a bolt member extending from the lower part of said latch member, said bolt member lying parallel with the door and adapted when in its operative position to project beyond a margin of the door, and a hinged keeper secured to the door and adapted to swing in a vertical plane into or out of position to cooperate with said bolt member.

7. The combination with a lock comprising a shank and a curved bolt projecting at one side thereof and arranged to be normally projected by gravity, of a keeper comprising a hinged member having an opening provided with a beveled surface adapted to conform to and be engaged by the curved surface of the bolt.

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